



UNITED STATES
DEPARTMENT OF
AGRICULTURE

FOREST
SERVICE

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REPLY TO: 3420

DATE: APR 08 1987

SUBJECT: Forest Pest Management Assistance Trip to the Los Padres
National Forest (Report 87-6)

TO: Forest Supervisor, Los Padres National Forest

This memo summarizes a pest management assistance trip in and around the Los Padres National Forest from March 9-11, 1987. Personnel involved included Dave Schreiner, SO; Gene Onken, Monterey RD; and John Wenz and John Pronos, Forest Pest Management (FPM), RO. The purpose of the trip was to evaluate several pest related situations of concern to FPM and the Forest.

Pitch Canker Disease

This fungus disease, caused by Fusarium subglutinans, was first found in California in August, 1986. The potential for pitch canker to damage pines in the Region is great. It is currently restricted to Alameda, Monterey, San Mateo, Santa Clara, and Santa Cruz Counties. The largest infestation, by far, is near Santa Cruz and includes several thousand trees. Most damage to date has been to Monterey pine, although bishop and Aleppo pines have also been infected naturally. Experimentally, the fungus has been successfully inoculated into digger, Eldarica, Coulter, ponderosa, and Monterey X knobcone pines. Conifers other than pines are resistant.

A Working Group comprised of the California Department of Forestry, California Department of Food and Agriculture, Caltrans, California Department of Parks and Recreation, UC-Berkeley, Forest Service, and several County Agricultural Commissioners has prepared a report on pitch canker that includes a recommendation on control. There will not be a statewide eradication program; rather, each county and public land management agency will have to deal with the disease on its own. The report does emphasize the importance of intensive control efforts. If it appears that pitch canker is going to reach National Forest land, FPM will provide more detailed information on management alternatives to appropriate Forests and Districts.

In Santa Cruz, Pronos and Wenz briefed personnel from the Forest and the California Department of Parks and Recreation on the history, biology, identification, and potential management of pitch canker. Infected Monterey pines were examined at New Brighton State Beach. Natural Monterey pine stands





near Carmel (Del Monte Forest) and Cambria were also surveyed, but no evidence of pitch canker disease was found. Evidence of other pests, however, was obvious. Typically, these stands were densely stocked and appeared to be unthrifty. There was a high incidence of dwarf mistletoe infection and western gall rust bole cankers. The irregular pine scale, Toumeyella pinicola, and twig beetles, Pityophthorus sp., were found associated with twig dieback. The Monterey pine ips, Ips mexicanus, was observed breeding in a few recently felled pines. Although usually a secondary species, these beetles can build up in slash and attack nearby standing pines, particularly those stressed by other factors. Evidence of the red turpentine beetle, Dendroctonus valens, was seen around the base of several pines in the Cambria area. Attacks by the red turpentine beetle do not usually result in tree mortality, but can be an indication that the tree is being stressed by other factors and repeated attacks can further weaken the tree. Much of the current and past tree mortality (as evidenced by stumps) around Cambria appeared associated with construction activities. All of these factors contribute to tree/stand decadence and can be expected to continue at varying levels of intensity in unmanaged Monterey pine stands.

South Coast Ridge Plantations

ROOT DISEASE. A group of four dead ponderosa pine seedlings in a 1983 plantation was examined. These seedlings were centered around a Coulter pine stump that had been cut prior to planting; several other nearby seedlings had off-color foliage. This pattern of injury suggested root disease, and because Fomes annosus conks have previously been found in nearby stands, the dead seedlings were dug up and taken to the RO for laboratory diagnosis. The lab tests were positive for annosus root disease. The terminals of three of the four dead seedlings were infested with a beetle larvae, possibly in the genus Ernobius (family Anobiidae). From the limited extent of larval gallery construction in the terminals and the degree of crown fade, these beetles appear to be secondary, attacking the already dead/dying seedlings.

All Coulter pine stumps were supposed to be treated with borax when cut. Unless these pines were infected prior to cutting, there are several reasons to explain the presence of F. annosus. This stump could have been inadvertently missed, it could have been incompletely treated, or the borax could have been ineffective (field tests show proper borax treatment to be effective 90% of the time).

Finding annosus root disease in the plantation demonstrates both the need for treating all conifer stumps, and the importance of completely covering stump tops. At this stage, there is little that can be done to eliminate root disease from the plantation. Additional ponderosa pine seedlings may die, and replanting with any conifers is likely to result in mortality. Seedling and sapling mortality should not extend beyond the area occupied by individual infected Coulter pine stumps. Only hardwoods will offer resistance to annosus root disease.





GIRDLING PINES TO CONTROL DWARF MISTLETOE. The Monterey District has been girdling dwarf mistletoe-infected overstory Coulter pines in certain areas and underplanting with ponderosa pine. The girdling is intended to create snags for wildlife as well as eliminate overstory sources of dwarf mistletoe seed. Removal of inoculum is necessary to ensure a mistletoe-free pine understory. From the standpoint of reducing mistletoe spread, girdling is just as effective as tree falling or removal. However, partially or incompletely girdled trees often take years to die or do not die at all. The mistletoe will not be killed until its host tree is dead. In order to kill trees quickly, it is necessary to completely sever the active water conducting elements in the xylem. This means cutting into the stem wood an inch or more around the entire tree circumference. In cases where only the bark is removed and the xylem lightly scored, trees can remain green and support mistletoe plants, for several years.

The District expressed concern that girdling the Coulter pine could contribute to bark beetle-related problems in the area. In essence, girdling trees should not materially increase bark beetle populations in the area, nor result in unacceptable bark beetle damage to the stand. Girdling obviously creates stress and, to the extent that the trees decline over a period of time before dying (i.e., remain very susceptible to bark beetle attack), they will have an increased probability of being successfully attacked by beetles. If the trees are attacked by the western pine beetle, Dendroctonus brevicornis, the aggregating pheromones released could attract enough beetles into the area that nearby, uninfected, ungirdled, overstory pines could be attacked and killed. In this particular situation, if such mortality were to occur, the impact would be low since a) the number of residual uninfested, ungirdled, overstory pines is few and their retention is not critical to meeting objectives for the stand and b) if killed, they can be utilized as snags to help meet wildlife objectives. There are indigenous bark beetle populations and numerous hosts throughout the surrounding area. The creation of a little additional, highly suitable habitat through girdling, even if utilized, will not have a significant effect on local bark beetle populations.

Oak Dieback/Decline

For the past 6 years, oaks, particularly coast live oak (Quercus agrifolia) have been dying back or declining over large areas in California. Two fungi (Cryptocline cinerescens and Discula quercina) have been consistently associated with the death of small twigs, and a third fungus (Diplodia quercina) has been implicated in the death of larger twigs and branches up to 6 inches in diameter. Oak dieback was observed in recreation areas on the Santa Barbara District in August, 1985 (FPM Report 85-33). At that time, twigs examined from affected trees did not yield any disease organisms, but the Pacific oak twig borer (Agrilus angelicus) was present and causing injury.

Twigs showing symptoms of dieback were collected from Cerro Alta campground during this trip and incubated in our laboratory. A fungus matching the description of Diplodia quercina was recovered from several samples. Many of the twigs exhibited small cankers and bark splitting or cracking. Evidence of several insect species was also found. Oviposition slits containing eggs of the





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oak twig hopper, Platycotis vittata (family Membracidae), were fairly common. Galls formed by gall wasps (family Cynipidae) were present on several twigs and leaves. A few scales were observed on the twigs and evidence of leafminers was seen on some of the leaves. All of these insects are common on oaks, and their role, if any, in observed dieback is unknown.

There does not appear to be a simple cause or solution to the oak dieback situation. Several fungicides have been tested and some show promise for control of the fungi involved, but none are currently registered for use. Because several biotic and abiotic factors are probably contributing to the dieback, the use of a fungicide, even if effective, would only solve part of the problem.

As in many pest situations, adverse environmental factors create conditions that stress plants and predispose them to successful insect and disease attack. Drought stress is believed to play a major part in oak dieback. Currently, there is not enough information about this phenomenon to suggest specific management alternatives with any degree of confidence. We assume that activities which promote healthy tree growth would also help minimize the impact of dieback. For example, pruning high value trees and irrigating them during periods of drought should be of benefit.

This oak dieback situation underscores the value and need for long term vegetation management plans for recreation areas. Such plans would establish objectives and incorporate integrated pest management principles to deal with all pests, including oak dieback. It would be FPM's responsibility, working with the Forest and Districts, to provide site specific pest input to the plans.


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